Connecting Credentials

BUILDING LEARNING-BASED CREDENTIALING SYSTEMS

Using real-time data and technology to empower credential users and create continuous feedback mechanisms

Work Group Report

June 2016

Data/Technology Work Group Report

I.   Background

Connecting Credentials is a collaborative effort of more than 100 national organizations and more than 2,000 stakeholders to make degrees, certificates, industry certifications, badges and other credentials easier to understand, use and interconnect. Postsecondary credentials (degrees, certificates, industry certifications, and more) are the currency through which skills and knowledge are recognized -- connecting people to jobs, education programs and career pathways.

Connecting Credentials aims at creating a more interconnected credentialing ecosystem — one that is student-centered and learning-based. Such a system is needed for several reasons: to ensure educational quality; increase access; align industry, education and issuers of credentials; multiply the benefits of increased attainment; reduce social inequity; and foster individual progress that results in market-valued credentials.

Participants at the National Credentialing Summit convened by Lumina Foundation in October 2015 identified five priority areas of focus needing more in-depth work. In January 2016, the Connecting Credentials team convened work groups focused on those five topics, charged with developing recommended actions. The work groups, which involved more than 100 leaders from across the country, included:

- **Developing common language** to serve as the basis for a connected credentialing system;
- **Using real-time data and technology** to empower credential users and create continuous feedback mechanisms;
- **Creating nimble end-to-end quality assurance processes** to support portability and trust of credentials;
- **Advancing scalable employer engagement approaches** to improve demand signals and increase relevancy and currency of credentials; and
- **Creating flexible credentialing pathways** leading to family-sustaining jobs to increase equity.

This report and those of the other four work groups can be found at www.connectingcredentials.org. An action plan integrating the work of all five groups will be released in summer 2016.

II.   Work Group Report

Overview

The Data/Technology Working Group developed a strategic vision for a public-private data infrastructure required to support a well-functioning credential marketplace. We developed an outline of the seven most critical building blocks for this data infrastructure, with examples of key initiatives currently underway to improve these components. We also identified the need for this data infrastructure to support a new generation of user-friendly data technologies. Data should be accessible to a wide variety of users, including users that have historically lacked access to reliable information about credentials.

Finally, the group identified major challenges and action steps to advance development of a strong credentialing data infrastructure. In formulating these action steps, assumptions included:

- Data can help a variety of stakeholders make better decisions.
- An ideal data infrastructure would leverage data already being collected and build on systems that already exist, rather than starting something new.
- Both public and private data systems have value.
- Enhanced coordination by current data initiatives would result in greater impact.

Problem Statement

Credential users (i.e. students, workers, educational institutions, employers, government) need comparable, reliable, and actionable information about the credential marketplace. Better data would help individuals choose credentials that lead to good jobs, and inform the alignment of education/training with employer needs to help the economy thrive. Necessary data includes information about what credentials are recognized or required by employers; the characteristics, connections and value of credentials; number and characteristics of individuals that hold individual and combinations of credentials; and overall trends in the credential marketplace. Right now, there is inadequate data available, and the available data is not easily linked and integrated. Moreover, existing data is not disseminated with user-friendly technologies. Multiple initiatives outlined in the Connecting Credentials Landscape Review are working to create new data collections, link existing data, and promote the use of technology to standardize and share credential information. These initiatives must be better aligned and coordinated to effectively address data and technology challenges in the credential marketplace.

Vision

A well-functioning credential marketplace requires a comprehensive data infrastructure that captures and links data on the full range of credentials awarded by both public (e.g. community colleges) and private (e.g., industry associations) entities. Data may be used to illustrate connections with other credentials and career opportunities. This fully interoperable public-private data infrastructure requires a new approach to how employers signal their requirements for workers, and how individuals can control and manage their credentialing information. This infrastructure should be designed to support a new generation of on-line tools that improve access and opportunity in the credential marketplace. Multiple applications developers can use this public-private data infrastructure to develop useful tools, similar to transportation, travel, and customer product apps that draw from multiple public and private data sources.

Public-Private Data Infrastructure: Key Building Blocks

The Connecting Credentials Landscape Review identified multiple initiatives that are working to create new data collections, link existing data, and promote the use of technology to standardize and share credentials information. The Working Group also identified additional initiatives that help to accomplish these goals. These initiatives cut across seven major building blocks for a public-private data infrastructure:

1. **Employer Human Resource Information Systems.** These are systems that employers use to manage information about their workers. Some systems are comprehensive and address the full array of human resource management functions, whereas others are more specialized (e.g., Competency Management Systems, Recruitment Management Systems, Applicant Tracking Systems). Many are used to recruit, screen and hire talent based in part on competencies and credentials (e.g., Applicant Tracking Systems). They also are used to post on-line job openings, and to identify and recruit both passive and active jobseekers by searching on-line credential holder and professional profiling platforms (e.g., LinkedIn). This key building block is addressed by the employer working group.

2. **On-Line Credential Holder and Professional Profiling Systems**. These are systems used by individuals to publish and manage an on-line professional profile that includes a wide variety of competency and credentialing information (e.g., LinkedIn, Badging and Academic Transcript Platforms) as well as the systems used by credentialing organizations to link, transfer and validate this information (e.g., credential validation services). This key building block is being addressed by a number of initiatives including Badge Platforms, American Association of Collegiate Registrars and Admissions Officers Extended Transcript Initiative, IMS Global's Digital Credentials, eTranscript, and Competency-Based Education initiatives, PESC transcript initiatives, and the W3C Verifiable Claims Task Force.

3. **On-line Learning Management Systems and Learning Resource Management Systems**. These are systems that use competency data to manage learning, link to external learning resources, and provide information to credentialing organizations to document the attainment of competencies required for credentials. These systems also transmit information to on-line credential holder/professional profiling systems and make recommendations to individuals based on changing employer needs and credentialing trends. This building block includes initiatives such as the Learning Registry, national, state, and institutional Open Education Resource initiatives, and professional profiling platforms with recommendations on learning resources (e.g., LinkedIn).

4. **National and State Individual-Level Longitudinal Data Systems**. These are systems that compile, link, and manage individual-level data on students and workers. Data includes demographics, participation in education and training, credentials awarded, and employment and earnings. These systems historically focused on publicly funded education and training, and those individuals receiving for-credit degrees and certificates. They seldom include extensive coverage of private universities and proprietary schools. Recent initiatives focus on expanding coverage to non-credit certificates and industry and professional certifications. This building block includes federal grants for State Longitudinal Data Systems (SLDS) linking state education and workforce data, as well as national and regional clearinghouses such as the National Student Clearinghouse (NSC) and the Western Interstate Commission for Higher Education (WICHE). This also includes pilot projects now being conducted by NSC and the Association of Career and Technical Education (ACTE) Certification Data Exchange Project to incorporate

industry and professional certification data. Finally, this area includes initiatives to improve the capacity and utilization of these data systems, including the Workforce Data Quality Campaign (WDQC) and the Georgetown University Center for Education and the Workforce.

5. **Credentialing Organization and Credential Information Systems**. These are systems that maintain information on the organizations that issue credentials and the credentials themselves. This includes systems that manage information on specific types of credentials such as industry and professional certifications (e.g., DOL Certification Finder) and career and education guidance systems that provide information on universities and colleges and their programs and degrees. The more recent Credentialing Transparency Initiative (CTI) is exploring a Credential Registry that would provide comparable information about the full range of credentialing organizations and credentials including information on competency requirements.

6. **Government Statistical Systems and Labor Market Information Systems.** These are systems that compile and transmit government statistics based on government administrative records and surveys (e.g., GEMeNA) as well as government and private data services that produce labor market information based on on-line job postings (e.g., Burning Glass), labor market returns for credentials (e.g., Georgetown CEW, Collegemeasures.org, state consumer information systems), and industry and occupational demand and supply related to credentials.

7. **Competency and Credential Frameworks and Taxonomies**. Credentials attempt to document and represent knowledge, skills, abilities, performance, and experience. Multiple initiatives are creating frameworks to describe credentials by precisely what knowledge, skills, etc. they signify. Frameworks include the Degree Qualifications Profile, the Liberal Education and America's Promise (LEAP), Essential Learning Outcomes, Beta Connecting Credentials Framework, O*NET and the industry sector competency models developed by the U.S. Department of Labor. One example of credential connections frameworks is the CompTIA career and credential pathway map for information technology certifications.

Challenges and Actions. This broader perspective on the building blocks for a new public-private data infrastructure provides a useful context for identifying key challenges and possible actions to address them. The working group identified the following challenges and some possible actions for consideration.

- **Improving Employer Demand Signaling in Real-Time Labor Market Information Systems**. Well-functioning credential marketplaces depend on clear and reliable employer data about their demand for competencies and credentials. Real-time labor market information systems, such as Burning Glass tools, compile information from on-line job postings. These tools are being used by states, localities, and education providers to plan human capital development strategies. However, serious data quality issues exist. Real-time labor market information would be improved if employers provided more clear and complete information in job postings, including competency and credentialing requirements. Additionally, we need information about how well job postings correspond to decisions employers actually make about hiring and retention.

Currently, no public information exists that links internet job postings to actual hires; let alone successful hires. This should be explored further with the Employer Signaling working group.

Actions:

- o Conduct a landscape scan to assess which types of employers (industry, size, etc.) have the best signaling about their credential needs and whether better signaling leads to benefits for employers.

- o Develop a communications strategy for getting employers and major job boards to adopt common language and data elements in job ads. Language should include clear signals about the strength of requirements for different credentials and competencies (i.e. preferred or required).

- **Improving Information on Career and Credential Connections**. Employer signaling and information about qualifications that lead to success in particular occupations are the first steps in connecting credentials to career opportunities. It also is important for credentialing organizations to clearly communicate not only related educational programs of study, but also where their credentials can best be applied in terms of industry (e.g., manufacturing, retail trade, health care and social assistance) and occupation (e.g., machinists, cashiers, registered nurses). These specifications should fit into established taxonomies: Classification of Instructional Programs (CIP) for programs of study, North American Industrial Classification System (NAICS) for industries, and Standard Occupational Classification (SOC) for occupations. Finally, credentialing organizations should explain how their credentials relate to others, including degrees, certificates, licenses, and certifications. This information is especially critical to help students and workers pick education and career paths.

Actions:

- o Improve the practice and precision of matching programs of study and occupations to credentials, including certifications and licensing.

- o Develop tools for mapping credential relationships, and showing how combinations of credentials are required or preferred for particular industries or occupations, or can be aligned to create career pathways.

- o Examine best practices and develop tools to help education/workforce practitioners to identify the most critical credentials in particular regions and industry sectors.

- o Explore the value of using privately-operated data sets, such as those with resume information, to conduct richer analysis of education and career pathways. Assess the benefits and limitations of using this data.

- **Improving Credential Coverage in Public-Private Data Systems**. National and state longitudinal data systems, which have individual-level data that allows analysis of education and career trajectories, do not provide sufficient coverage of the full range of credentials emerging in the

rapidly growing credential marketplace. Public data systems are often missing information about certificates and degrees from non-public education providers (e.g., for-profit career schools, private independent schools,) and about attainment of state-issued licenses and certifications awarded by industry associations and employers. Even data about credentials students earn from public education institutions can be missing. For example, a recent report on certificates in Connecticut estimated that only 52 percent of certificates are currently picked up by the state's data system. In addition, there is no one trusted source of comprehensive and comparable information about all types of credentials.

Actions:

- o Work with credentialing organizations in high-priority industries to develop models for linking certification data with individual-level information about education, other types of credentials, and employment.

- o Disseminate lessons learned from pilot data linkage projects, including recommendations for expansion to additional states and/or industries.

- o Develop and promote state policies to enhance state data systems to include all types of education providers, in order to capture attainment of all certificates and degrees and the full range of participating students.

- o Promote cross-state data sharing of credential information through a nationwide clearinghouse and/or regional data sharing agreements.

- o Develop a public-private credential registry that contains comprehensive information on all types of credentials and that can be linked to both public and private data systems.

- **Improving Competency Data Management and Exchange**. Competencies are becoming an increasingly important currency in the credential marketplace, but most existing data systems have not been designed to manage competency data. Where competency data is included, it is inconsistent. This is a serious issue that needs to be addressed in all seven of the building blocks for data infrastructure.

Actions:

- o Explore and inventory the multiple competency frameworks that are used across existing public-private data systems and identify opportunities for developing cross-walks and connections.

- o Explore how different data systems capture, manage and exchange competency data and identify opportunities for improving data management and exchange.

- o Promote the adoption of technical standards for competency-based data interoperability between institutional application systems, such as those published by IMS Global Learning Consortium.

- **Empowering Credential Holders and Expanding the Use of Professional Profiling Platforms**. Well-functioning credential marketplaces rely on both clear employer signals and improvements in the way credential holders can make themselves more visible to employers and identify career and credentialing pathways. There are several major initiatives in this area, such new badging, transcript, and portfolio systems. These provide a promising starting point in empowering credential holders, but more can be done.

  Actions:

  - o Explore leading practices in professional profiling, portfolio, and transcript systems and identify ways to improve data exchange between them and with other data systems through standardization and other strategies.

  - o Explore how current systems that use standards for improving interoperability can declare and verify their conformance in the credentialing marketplace.

- **User-Friendly Data Tools and Applications**. The new public-private data infrastructure for the credential marketplace will not be effective without a new generation of data tools and applications that make the data usable to different audiences, including credentialing organizations, employers, and students. The existing data infrastructure is not fully utilized because of the lack of user-friendly tools. Ways to effectively present information will require more attention as the envisioned data infrastructure continues to grow and develop.

  Actions:

  - o Identify the most important use cases and applications for major stakeholders in the credentialing marketplace and leading practices in developing a new generation of tools and applications for these stakeholders

  - o Explore how to develop a more open public-private data infrastructure for supporting a marketplace of application developers that can drive innovation in next-generation tools, similar to what is being done in consumer products, transportation, and travel markets.

III.   **Membership**

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